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ABSTRACT

There are problems in interpreting the naming behavior of children. Children may misname a word because the word is absent from their vocabulary, because it is not yet firmly established, or because of a word retrieval or lexical assessing problem. Preliminary results are reported of an experimental technique designed to account for these differences and to assist the examiner in making inferences about the development of naming skills in children. A 50- item confrontation naming task was designed with pictures chosen from 5 semantic categories. Each category contained five words judged to be in a 9-year old's vocabulary and five words judged to be of rare occurrence. Each child saw each picture twice. Responses were divided according to accuracy, and errors were placed into one of two groups. The first group contained errors in words known to be in the child's vocabulary; the second contained errors for words that were unavailable to the child. Examination and comparison of data suggest that the naming process used for corrections immediately after a response and for single errors might be the same process as that used for words that are either unstable or unavailable to the child. The data also show differences in use of naming strategies according to age group. This suggests that strategies for retrieving words change in time. (AMH)

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UNDERSTANDING THE DEVELOPMENT OF CONFRONTATION NAMING THROUGH IMMEDIATE RESPONSE CORRECTIONS

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If you show a picture of a vest to a competent adult speaker who has no perceptual problems, ask him to name it, and he doesn't know its name, you may think that he has a word finding or lexical accessing problem. The word vest is relatively frequent in an adult vocabulary. According to word frequency counts, vest is not as common in a child's vocabulary (Carroll et al., 1971). In fact, it is rather infrequent in a first grader's lexical store. If you ask a child to name the same picture, and he makes an error, there may be a number of reasons for the misnaming:

(1) The word may be absent from the child's vocabulary. He may not have learned the label yet.

(2) The child may be uncertain about the correct label because it is not yet firmly established in his lexicon.

(3) The word may be unavailable because of a word retrieval or lexical accessing problem.

There is an intrinsic problem in interpreting the naming behavior of children. It is difficult to decide if a naming error produced during a visual confrontation task is due to ABSENCE, INSTABILITY OR UNAVAILABILITY.

I will report here on the preliminary results of an experimental technique designed to tease out these differences and to assist the examiner in making inferences about the development of naming skills in children. This new procedure identifies different strategies that children use when

they incorrectly label pictures and provides empirical data that shows how naming behavior changes with age.

My interest in this topic led to an examination of naming tests (Kaplan et al, 1976; Obler and Albert, 1981) and assessment procedures for four to nine year old children. First, I examined the specific stimuli that were included in the tests. I found that most batteries do not control for factors that may affect naming performance. For example, pictures chosen for confrontation naming are often poorly drawn. In addition, stimuli are not balanced for frequency of occurrence in the vocabulary of children, nor do they take into account the various semantic categories and phonological distinctions that may or may not be available to the young child.

The methods of assessing naming skills were often unsatisfactory, as well. Most tests rely on a single presentation of picture stimuli. If the test is presented only one time, and a child misnames a picture, you don't know if he has already learned the word and simply can't recall it for a variety of reasons, or if the word has not yet been learned. If the pictures are presented a second time, however, and some of the originally misnamed pictures are now correctly named, then you know that some of the labels are indeed in the child's vocabulary. Most test interpretations rely solely on a correct/incorrect count. Therefore, if you administer the test twice and you examine the qualitative nature of errors and what word were mislabelled, you would get more information about vocabulary size and naming skills.

Given my dissatisfaction with available batteries for research purposes, I decided to devise an experimental naming test of my own. My

efforts resulted in a fifty item confrontation naming task. The pictures were chosen from five semantic categories. Results from previous research by Katherine Nelson (1974), Marcia Halperin (1974) and Oldfield and Wingfield (1965) helped to determine the categories for the test. Ten items depicted foods, ten were clothing, ten were animals, ten were musical instruments and the remaining pictures were of household implements (such as toaster and comb). Items within each category were also checked for frequency of occurrence in the vocabulary of an average nine year old child. Five items in each semantic field were very frequent, and five items were rare, as judged by The American Heritage Word Frequency Book (Carroll, Davies and Richman, 1971). A black and white drawing of the most prototypical picture of each stimulus was placed on a 5 by 7 index card. The test was designed to be presented twice to each child.

Children in the study were at three age levels: 4 to 5; 6 to 7; and 8 to 9 years old. Each child was given the revised Peabody Picture Vocabulary Test (1965) and the Developmental Test of Visual-Motor Integration (Beery & Buktenica, 1967) to rule out receptive language or visual perceptual problems. The means reported here indicate age appropriate skills for each group. All children were also within normal limits of intelligences as judged by school reports or tests.

INSERT TABLE I HERE

Responses for children in each of the three age levels were divided according to accuracy. As expected, the number of naming errors significantly decreased as age, vocabulary level and facility with language increased.

INSERT TABLE 2 HERE

All errors were subsequently placed into one of two groups:

INSERT FIGURE I HERE

The first group contained all instances of errors for words that are known to be in the child's vocabulary; the second group contained instances of errors for words that may not have been learned yet or may not be available because of accessing problems or uncertainty about the correct label.

Errors in Group I had two forms:

There were single errors or words that were misnamed on one trial and correctly named during the other presentation. For example, when shown a picture of a guitar, a child might say violin on the first trial, and guitar on the second trial.

The other type of error has never been described before. I have called it an immediate response correction. This unique subgroup refers to errors that are immediately followed by correct productions. For example, when shown a picture of a mop, the child might say: broom, I mean mop, or simply broo,mop.

By making errors, either immediately before producing the correct label, or during one of the two trials, we can see that the child does know the picture name.

The second group of errors form the double error group. The child may or may not know the correct label but misnames the picture during both presentations. For example, when shown a toothbrush, the child might say scrubber during the first trial, and brusher during the second trial.

INSERT TABLE 3 HERE

Table 3 and the accompanying graph show that as vocabulary and age increase, so do immediate response corrections and single errors. There seems to be a positive correlation between age level and Group I errors. The double error category is halved between the ages of four to eight years. We might even offer the possibility that double errors do indeed represent unlearned items. For one thing, when I informally asked each child if they were familiar with or had seen a picture of a misnamed item before, they often said that they didn't know a double error picture. Also, there seems to be a negative correlation between the double error percentages and the Peabody receptive language score.

By following the procedure used, we were able to identify a group of errors produced when naming even though the children knew the correct name. This allowed examination of the quality or types of errors produced in Group I, and, therefore, a glimpse at what a child does to produce a name or to retrieve it from memory. Since we had data on three age groups, we were able to ask if children used the same strategies to name pictures as they got older. Finally, we could see if Group I and Group II error types differ, and examine the different strategies that were used to name familiar and unfamiliar pictures.

INSERT TABLE 4 HERE

All errors were categorized according to error type. Using qualitative data from Denckla and Rudel (1976), Goodglass and Baker (1976),

Wolf (1981), I devised a categorization scheme of ten error types. They include:

PHONO Phonologically related errors: DIKAR for GUITAR

PERC Perceptually related errors: RAILING for HARP

SEM Semantically related errors: SUIT for VEST

PERCEM Perceptual-semantically related errors: DRUM for TAMBOURINE

CIRC Three kinds of circumlocutions:

Descriptive: UNTIED for SHOE

Contextual: IN A BAND for HORN

Functional: SWEEPING THE FLOOR for MOP

ORD Ordinates:

Superordinate: FOOD for CRACKER

Subordinate: LITTLE COLT for HORSE

P/W Part/whole errors: SHOELACE for SHOE

CMNT Comments: I DON'T KNOW. or WHAT IS IT AGAIN?

NR No response

OTHER Other, which included:

Perseveration: the previous response CLOCK repeated for TIE

Jargon: HYDROPHOME for HARMONICA

Gesture: YOU GO LIKE THIS for VIOLIN

An error could be placed into more than one category. For example, the label KEEKOCK for TURKEY is a phonological error and a perceptual-semantic error.

The Group I data were coded for error type and each category was summed. They were then rank ordered according to magnitude of error types.

INSERT TABLE 5 HERE

Using Friedman's 2 way analysis of variance by rank, I found that the magnitude of error types produced by each age group were significantly different from each other at the $p < .005$ level.

These data indicate that as children develop their naming strategies, the types of errors they make for known labels also develop. All three age groups seem to make many perceptual-semantically related errors. In fact, for all the children, at least fifty percent of all errors produced are in the same semantic field as the stimulus picture, as in the example lizard for turtle. The majority these errors are also perceptually similar to the pictures, like the error blouse for dress. Use of the remaining strategies, such as circumlocutions (blowing thing for whistle), super and subordination (aminal for snake) and purely perceptually related errors (hat for ice cream cone), change with age. The younger children randomly choose strategies, while the six year olds and eight year olds demonstrate preferences for naming strategies. We see equal use of semantic, ordinate, and phonological strategies by the youngest group. The older children, on the other hand, are limiting their use of certain strategies and increasing the use of others as their naming behavior develops. The differences in the age groups suggest that rules or strategies for retrieving words change in time.

This becomes even more evident when we look at the Group II errors, those produced during both test presentations.

INSERT TABLE 6 HERE

Again we see that children in each age group make significantly different errors, in terms of type. While semantically related errors and perceptual-semantically related errors are within the top three ranks for all ages, the order of magnitude for the other categories are discrepant, with similar patterns beginning to appear for the two older groups.. These data would argue against theories that state that children rely mainly on any one feature or strategy to name pictures.

Group I and Group II errors were then compared. From this comparison, we can learn whether children are using similar strategies to name, or misname, words that they know and words that they may not know, and whether, in fact, we need to separate Group I and Group II errors to understand naming and misnaming strategies.

INSERT TABLE 7 HERE

Using the Mann-Whitney test for each individual age group, we find that there are no significant differences in rank ordered error types for known lexical and unknown lexical items. While the order of error categories might be slightly variable for each subject group, percentages do not differ enough to suggest different strategies for Group I and Group II pictures.

To take this comparison one step further, I collapsed error categories across age groups.

INSERT TABLE 8 HERE

Again, we see slight tendencies for different rank orders that are not even significantly different at the $p < .01$ level.

These data suggest that the naming process, or misnaming process, used for immediate response corrections and single errors might indeed be the same process for words that are either unstable, not yet learned or unavailable to the child. Whether a word is familiar or unfamiliar, young children rely heavily on perceptual and semantic information to name, showing no statistical preferences for using the other seven strategies to label the pictures. The two older groups also use visual cues and semantic fields to recall names. They seem to be developing a hierarchy for the remaining processes, as well.

I cannot suggest a specific rule governed strategy for four to nine year old naming. I can argue that there seem to be group differences in naming styles that are similar to some of the word learning strategies that have been proposed. The processes of naming, or misnaming as the case may be, seem to change with age and vocabulary development. The development of visual confrontation naming skills can be systematically described to further our understanding of language development, in general, and to increase the effectiveness of clinical treatment for childhood word finding problems.

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TABLE I

SUBJECT CHARACTERISTICS

GROUP	N	AGE RANGE	X AGE	X PPVT-R VOCAB. AGE	X VMI AGE
A	18	4;0-5;0	4;4	5;3	4;8
B	18	6;0-7;0	6;9	8;3	7;8
C	18	8;0-9;0	8;7	10;6	8;3

FIGURE I

ERROR GROUPS

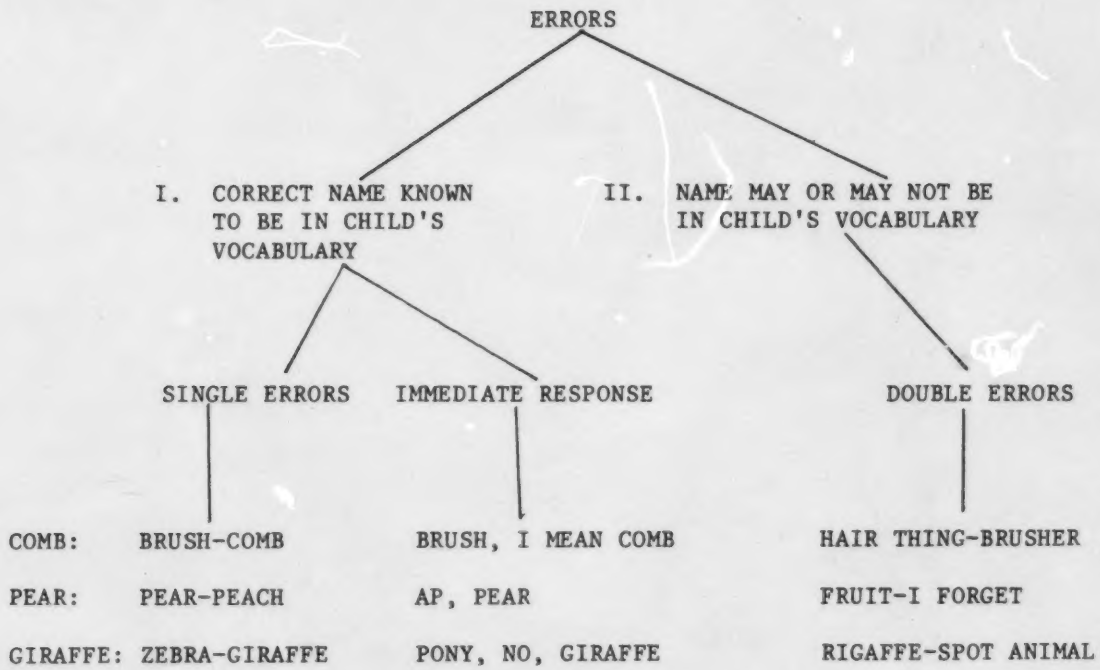

TABLE II

RESPONSE TYPE PERCENTAGES

GROUP	CORRECT	INCORRECT
A	75.9%	24.8%
B	87.8%	12.2%
C	91.0%	9.0%

TABLE 3

PERCENTAGE OF ERROR GROUPS FOR EACH AGE LEVEL

AGE GROUP	IMMEDIATE RESPONSE CORRECTIONS	SINGLE ERRORS	DOUBLE ERRORS
A	5%	9%	86%
B	16%	17%	67%
C	35%	19%	46%

TABLE 4

ERROR CATEGORIES

PHONO	Phonologically related error	dikar/ GUITAR əsaput/OCTAPUS
PERC	Perceptually related error	railing/HARP napkins/CRACKERS
SEM	Semantically related error	suit/VEST bread/TOASTER
PERSEM	Perceptual-semantically related error	drum/TAMBOURINE cheese/CAKE mitten/GLOVE
CIRC	Circumlocution descriptive contextual functional	 untied/SHOE in a band/HORN sweeping the floor/MOP
ORD	Ordinate superordinate subordinate	 food/CRACKERS small colt/HORSE
P/W	Part/whole	shoelace/SHOE
CMNT	Comment	I don't know What is that thing again?
NR	No response	
OTHER	Other Perseveration Jargon Gesture	 clock/TIE hydrophone/HARMONICA you go like this/VIOLIN

TABLE 5

RANK ORDERED MAGNITUDE OF ERROR CATEGORIES: GROUP I

4-5 year olds		6-7 year olds		8-9 year olds	
PERSEM	33%	SEM	42%	PERSEM	47%
PERC	15%	PERSEM	32%	SEM	32%
SEM	11%	CMNT	10%	PHONO	10%
ORD	11%	ORD	7%	ORD	3%
CMNT	11%	PHONO	6%	CMNT	2%
PHONO	11%	CIRC	3%	PERC	2%
CIRC	7%	PERC	1%	CIRC	1%
				P/W	1%
				OTHER	1%

TABLE 6

RANK ORDER MAGNITUDE OF ERROR CATEGORIES: GROUP II

4-5 year olds		6-7 year olds		8-9 year olds	
PERSEM	34%	SEM	30%	SEM	27%
SEM	22%	CMNT	20%	PERSEM	24%
PHONO	11%	PERSEM	17%	CMNT	23%
CMNT	9%	PHONO	8%	PERC	13%
PERC	7%	CIRC	5%	PHONO	8%
NR	7%	ORD	5%	CIRC	3%
CIRC	6%	PERC	3%	NR	2%
ORD	3%	NR	3%		
P/W	.6%	OTHER	3%		

TABLE 7

COMPARISON OF RANKS FOR GROUP I AND II ERROR TYPES

4-5 year olds		6-7 year olds		8-9 year olds	
I	II	I	II	I	II
PERSEM	PERSEM	SEM	SEM	PERSEM	SEM
PERC	SEM	PERSEM	CMNT	SEM	PERSEM
SEM	PHONO	CMNT	PERSEM	PHONO	CMNT
ORD	CMNT	ORD	PHONO	ORD	PERC
CMNT	PERC	PHONO	CIRC	CMNT	PHONO
CIRC	CIRC	PERC	PERC	CIRC	NR
	ORD		NR	P/W	
	P/W		OTHER	OTHER	

TABLE 8

RANK ORDER OF ERROR TYPE MAGNITUDES FOR GROUPS I AND II: COLLAPSED AGES

I		II	
PERSEM	40%	SEM	26%
SEM	33%	PERSEM	25%
PHONC	8%	CMNT	18%
CMNT	6%	PHONO	9%
ORD	6%	PERC	7%
PERC	4%	CIRC	5%
CIRC	3%	NR	5%
P/W	.5%	ORD	3%
OTHER	.5%	OTHER	1%
NR	0	P/W	.3%